IN THE CLAIMS:

Claims 60 – 70 have been added. Claims 2 – 4 have been cancelled. Claims 1, 40 and 50 have been amended, as follows:

1. (currently amended) An apparatus for converting an input voice signal into an output voice signal according to a target voice signal, the apparatus comprising:

an input device that provides the input voice signal composed of an original sinusoidal component and an original residual component other than the original sinusoidal component;

an extracting device that extracts original attribute data from at least the sinusoidal component of the input voice signal, the original attribute data being characteristic of the input voice signal and containing amplitude data representing an amplitude of the input voice signal in the form of static amplitude representing a basic variation of the amplitude and vibrato-like amplitude data representing a minute variation of the amplitude, superposed on the basic variation of the amplitude, pitch data representing a pitch of the input voice signal, and spectral shape data representing a spectral shape of the input voice signal;

a synthesizing device that synthesizes new attribute data based on both of the original attribute data derived from the input voice signal and target attribute data being characteristic of the target voice signal composed of a target sinusoidal component and a target residual component other than the sinusoidal component, the target attribute data being derived from at least the target sinusoidal component, and containing amplitude data representing an amplitude of the target voice signal in the form of static amplitude data representing a basic variation of the amplitude and vibrato-like

amplitude data representing a minute variation of the amplitude, superposed on the

basic variation of the amplitude, pitch data representing a pitch of the target voice

signal, and spectral shape data representing a spectral shape of the target voice signal;

and

an output device that operates based on the new attribute data and either of the

original residual component and the target residual component for producing the output

voice signal.

Claims 2 – 4 (cancelled).

5. (original) The apparatus according to claim 1, wherein the synthesizing

device operates based on both the original attribute data composed of a set of original

attribute data elements and target attribute data composed of another set of target

attribute data elements in correspondence with one another to define each

corresponding pair of the original attribute data element and the target attribute data

element, such that the synthesizing device selects one of the original attribute data

element and the target attribute data element, such that the synthesizing device selects

one of the original attribute data element and the target attribute data element from

each corresponding pair for synthesizing the new attribute data composed of a set of

new attribute data elements each selected from each corresponding pair.

6. (original) The apparatus according to claim 1, wherein the synthesizing

device operates based on both of the original attribute data composed of a set of

original attribute data elements and the target attribute data composed of another set of

target attribute data elements in correspondence with one another to define each

corresponding pair of the original attribute data element and the target attribute data

element, such that the synthesizing device interpolates with one another the original attribute data element and the target attribute data element of each corresponding pair for synthesizing the new attribute data composed of a set of new attribute data elements each interpolated from each corresponding pair.

7. (original) The apparatus according to claim 1, further comprising a peripheral device that provides the target attribute data containing pitch data representing a pitch of the target voice signal at a standard key, and a key control device that operates with a user key different than the standard key is designated to the input voice signal for adjusting the pitch data according to a difference between the standard key and the user key.

8. (original) The apparatus according to claim 1, further comprising a peripheral device that provides the target attribute data divided into a sequence of frames arranged at a standard tempo of the target voice signal, and a tempo control device that operates when a user tempo different from the standard tempo is designated to the input voice signal for adjusting the sequence of frames of the target attribute data according to a difference between the standard tempo and the user tempo, thereby enabling the synthesizing device to synthesize the new attribute data based on both the original attribute data and the target attribute data synchronously with each other at the user tempo designated to the input voice signal.

9. (original) The apparatus according to claim 8, wherein the tempo control device adjusts the sequence of the frames of the target attribute data according to a difference between the standard tempo and the user tempo, such that an additional frame of the target attribute data is filled into the sequence of the frames according to

the difference between the standard tempo and the user tempo, such that an additional frame of the target attribute data is filled into the sequence of frames of the target attribute data by interpolation of the target attribute data so as to match with a sequence of frames of the original attribute data provided from the extracting device.

10. (original) The apparatus according to claim 1, further comprising a synchronizing device that compares the target attribute data provided in the form of a first sequence of frames with the original attribute data provided in the form of a second sequence of frames so as to detect a false frame that is present in the second sequence but is absent from the first sequence, and that selects a dummy frame occurring around the false frame in the first sequence so as to compensate for the false frame, thereby synchronizing the first sequence containing the dummy frame to the second sequence containing the false frame.

11. (original) The apparatus according to claim 1, wherein the synthesizing device modifies the new attribute data so that the output device produces the output voice signal based on the modified new attribute data.

12. (original) The apparatus according to claim 1, wherein the synthesizing device synthesizes additional attribute data in addition to the new attribute data so that the output device concurrently produces the output voice signal based on the new attribute data and an additional voice signal based on the additional attribute data in a different pitch than that of the output voice signal.

Claims 13 – 39 (cancelled).

40. (currently amended) A method of converting an input voice signal into an output voice signal according to a target voice signal, the method comprising the steps

of:

providing the input voice signal composed of an original sinusoidal component and an original residual component other than the original sinusoidal component;

extracting original attribute data from at least the sinusoidal component of the input voice signal, the original attribute data being characteristic of the input voice signal and containing amplitude data representing an amplitude of the input voice signal in the form of static amplitude data representing a basic variation of the amplitude and vibrato-like amplitude data representing a minute variation of the amplitude, superposed on the basic variation of the amplitude, pitch data representing a pitch of the input voice signal, and spectral shape data representing a spectral shape of the input voice signal;

synthesizing new attribute data based on both of the original attribute data derived from the input voice signal and target attribute data being characteristic of the target voice signal composed of a target sinusoidal component and a target residual component other than the sinusoidal component, the target attribute data being derived from at least the target sinusoidal component, and containing amplitude data representing an amplitude of the target voice signal in the form of static amplitude data representing a basic variation of the amplitude and vibrato-like amplitude data representing a minute variation of the amplitude, superposed on the basic variation of the amplitude, pitch data representing a pitch of the target voice signal, and spectral shape data representing a spectral shape of the target voice signal; and

producing the output voice signal based on new attribute data and either of the original residual component and the target residual component.

Claims 41 – 49 (cancelled).

50. (currently amended) A machine readable medium used in a computer machine having a CPU, the medium containing program instructions executable by the CPU to cause the computer machine for performing a process of converting an input voice signal into an output voice signal according to a target voice signal, the process comprising the steps of:

providing the input voice signal composed of an original sinusoidal component and an original residual component other than the original sinusoidal component;

extracting original attribute data from at least the sinusoidal component of the input voice signal, the original attribute data being characteristic of the input voice signal and containing amplitude data representing an amplitude of the input voice signal in the form of static amplitude data representing a basic variation of the amplitude and vibrato-like amplitude data representing a minute variation of the amplitude, superposed on the basic variation of the amplitude, pitch data representing a pitch of the input voice signal, and spectral shape data representing a spectral shape of the input voice signal;

synthesizing new attribute data based on both of the original attribute data derived from the input voice signal and target attribute data being characteristic of the target voice signal composed of a target sinusoidal component and a target residual component other than the sinusoidal component, the target attribute data being derived from at least the target sinusoidal component, and containing amplitude data representing an amplitude of the target voice signal in the form of static amplitude data representing a basic variation of the amplitude and vibrato-like amplitude data

representing a minute variation of the amplitude, superposed on the basic variation of the amplitude, pitch data representing a pitch of the target voice signal, and spectral shape data representing a spectral shape of the target voice signal; and

producing the output voice signal based on new attribute data and either of the original residual component and the target residual component.

Claims 51 – 59 (cancelled).

60. (new) An apparatus for converting an input voice signal into an output voice signal according to a target voice signal, the apparatus comprising:

an input device that provides the input voice signal composed of an original sinusoidal component and an original residual component other than the original sinusoidal component;

an extracting device that extracts original attribute data from at least the sinusoidal component of the input voice signal, the original attribute data being characteristic of the input voice signal and containing amplitude data representing an amplitude of the input voice signal, pitch data representing a pitch of the input voice signal in the form of static pitch data representing a basic variation of the pitch and vibrato-like pitch data representing a minute variation of the pitch, superimposed on the basic variation of the pitch, and spectral shape data representing a spectral shape of the input voice signal;

a synthesizing device that synthesizes new attribute data based on both of the original attribute data derived from the input voice signal and target attribute data being characteristic of the target voice signal composed of a target sinusoidal component and a target residual component other than the sinusoidal component, the target attribute

data being derived from at least the target sinusoidal component, and containing

amplitude data representing an amplitude of the target voice signal, pitch data

representing a pitch of the target voice signal in the form of static pitch data

representing a basic variation of the pitch and vibrato-like pitch data representing a

minute variation of the pitch, superposed on the basic variation of the pitch, and

spectral shape data representing a spectral shape of the target voice signal; and

an output device that operates based on the new attribute data and either of the

original residual component and the target residual component for producing the output

voice signal.

61. (new) The apparatus according to claim 60, wherein the synthesizing device

operates based on both the original attribute data composed of a set of original attribute

data elements and target attribute data composed of another set of target attribute data

elements in correspondence with one another to define each corresponding pair of the

original attribute data element and the target attribute data element, such that the

synthesizing device selects one of the original attribute data element and the target

attribute data element, such that the synthesizing device selects one of the original

attribute data element and the target attribute data element from each corresponding

pair for synthesizing the new attribute data composed of a set of new attribute data

elements each selected from each corresponding pair.

62. (new) The apparatus according to claim 60, wherein the synthesizing device

operates based on both of the original attribute data composed of a set of original

attribute data elements and the target attribute data composed of another set of target

attribute data elements in correspondence with one another to define each

corresponding pair of the original attribute data element and the target attribute data

element, such that the synthesizing device interpolates with one another the original

attribute data element and the target attribute data element of each corresponding pair

for synthesizing the new attribute data composed of a set of new attribute data

elements each interpolated from each corresponding pair.

63. (new) The apparatus according to claim 60, further comprising a peripheral

device that provides the target attribute data containing pitch data representing a pitch

of the target voice signal at a standard key, and a key control device that operates with

a user key different than the standard key is designated to the input voice signal for

adjusting the pitch data according to a difference between the standard key and the

user key.

64. (new) The apparatus according to claim 60, further comprising a peripheral

device that provides the target attribute data divided into a sequence of frames

arranged at a standard tempo of the target voice signal, and a tempo control device that

operates when a user tempo different from the standard tempo is designated to the

input voice signal for adjusting the sequence of frames of the target attribute data

according to a difference between the standard tempo and the user tempo, thereby

enabling the synthesizing device to synthesize the new attribute data based on both the

original attribute data and the target attribute data synchronously with each other at the

user tempo designated to the input voice signal.

65. (new) The apparatus according to claim 64, wherein the tempo control

device adjusts the sequence of the frames of the target attribute data according to a

difference between the standard tempo and the user tempo, such that an additional

frame of the target attribute data is filled into the sequence of the frames according to the difference between the standard tempo and the user tempo, such that an additional frame of the target attribute data is filled into the sequence of frames of the target attribute data by interpolation of the target attribute data so as to match with a sequence of frames of the original attribute data provided from the extracting device.

66. (new) The apparatus according to claim 60, further comprising a synchronizing device that compares the target attribute data provided in the form of a first sequence of frames with the original attribute data provided in the form of a second sequence of frames so as to detect a false frame that is present in the second sequence but is absent from the first sequence, and that selects a dummy frame occurring around the false frame in the first sequence so as to compensate for the false frame, thereby synchronizing the first sequence containing the dummy frame to the second sequence containing the false frame.

67. (new) The apparatus according to claim 60, wherein the synthesizing device modifies the new attribute data so that the output device produces the output voice signal based on the modified new attribute data.

68. (new) The apparatus according to claim 60, wherein the synthesizing device synthesizes additional attribute data in addition to the new attribute data so that the output device concurrently produces the output voice signal based on the new attribute data and an additional voice signal based on the additional attribute data in a different pitch than that of the output voice signal.

69. (new) A method of converting an input voice signal into an output voice signal according to a target voice signal, the method comprising the steps of:

providing the input voice signal composed of an original sinusoidal component and an original residual component other than the original sinusoidal component;

extracting original attribute data from at least the sinusoidal component of the input voice signal, the original attribute data being characteristic of the input voice signal and containing amplitude data representing an amplitude of the input voice signal, pitch data representing a pitch of the input voice signal in the form of static pitch data representing a basic variation of the pitch and vibrato-like pitch data representing a minute variation of the pitch, superimposed on the basic variation of the pitch, and spectral shape data representing a spectral shape of the input voice signal;

synthesizing new attribute data based on both of the original attribute data derived from the input voice signal and target attribute data being characteristic of the target voice signal composed of a target sinusoidal component and a target residual component other than the sinusoidal component, the target attribute data being derived from at least the target sinusoidal component, and containing amplitude data representing an amplitude of the target voice signal, pitch data representing a pitch of the target voice signal in the form of static pitch data representing a basic variation of the pitch and vibrato-like pitch data representing a minute variation of the pitch, superposed on the basic variation of the pitch, and spectral shape data representing a spectral shape of the target voice signal; and

operating based on the new attribute data and either of the original residual component and the target residual component for producing the output voice signal.

70. (new) A machine readable medium used in a computer machine having a CPU, the medium containing program instructions executable by the CPU to cause the

computer machine for performing a process of converting an input voice signal into an output voice signal according to a target voice signal, the process comprising the steps of:

providing the input voice signal composed of an original sinusoidal component and an original residual component other than the original sinusoidal component;

extracting original attribute data from at least the sinusoidal component of the input voice signal, the original attribute data being characteristic of the input voice signal and containing amplitude data representing an amplitude of the input voice signal, pitch data representing a pitch of the input voice signal in the form of static pitch data representing a basic variation of the pitch and vibrato-like pitch data representing a minute variation of the pitch, superimposed on the basic variation of the pitch, and spectral shape data representing a spectral shape of the input voice signal;

synthesizing new attribute data based on both of the original attribute data derived from the input voice signal and target attribute data being characteristic of the target voice signal composed of a target sinusoidal component and a target residual component other than the sinusoidal component, the target attribute data being derived from at least the target sinusoidal component, and containing amplitude data representing an amplitude of the target voice signal, pitch data representing a pitch of the target voice signal in the form of static pitch data representing a basic variation of the pitch and vibrato-like pitch data representing a minute variation of the pitch, superposed on the basic variation of the pitch, and spectral shape data representing a spectral shape of the target voice signal; and

operating based on the new attribute data and either of the original residual

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component and the target residual component for producing the output voice signal.